

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1, 4-13, 15-23 and 25-26 are presently active in this case. The present Amendment amends Claims 1, 7, 10-11, 15-23 and 25-26 without introducing any new matter.

The outstanding Office Action objected to claims because of informalities. Claim 7 was rejected under 35 U.S.C. §112, second paragraph, as indefinite. Claims 1, and 4-6 were rejected under 35 U.S.C. §103(a) as unpatentable over Ishida et al. (U.S. Patent No. 5,253,299, herein "Ishida") in view of Druyvesteyn et al. (U.S. Patent No. 5,161,210, herein "Druyvesteyn") further in view of Short (U.S. Patent No. 5,068,896). Claim 25 was rejected under 35 U.S.C. §103(a) as unpatentable over Ishida in view of Druyvesteyn, further in view of Short and further in view of Laroche (U.S. Patent No. 6,405,163). Claims 8-13 were objected to but were indicated as allowable if rewritten in independent form. Claims 15-23 were allowed.

First, Applicant wishes to thank Examiner Faulk for the courtesy of a phone interview held on March 20, 2006.

Applicant acknowledges with appreciation the indication of allowable subject matter. However, since Applicant considers that independent Claim 1, from which Claims 8-13 depend, defines patentable subject matter, Claims 8-13 are maintained in dependent form at the present time.

To clarify Claim 1, Claim 1 is amended to recite "as parameters in said blending." This feature finds non-limiting support in Applicant's specification, for example at page 4, lines 6-11.

In response to the rejection under 35 U.S.C. §112, second paragraph, Claim 7 is amended to recite “an attenuation factor of a respective subband is determined by dividing the signal component corresponding to the subband of the audio signal by the noise component of the subband of the stereo difference signal,” and thereby finds support in Applicant’s specification on page 5, lines 20-24. In view of amended Claim 7, it is believed that all pending claims are definite and no further rejection on that basis is anticipated. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work with the Examiner in a joint effort to derive mutually acceptable language.

To better comply with U.S. claim drafting practice and to correct minor formalities, Claims 10-11, 15-23 and 25-26 are amended. Since the changes are only formal in nature, Applicant believes that the scope of the claims is not affected by these changes, and that therefore Claims 15-23 are still patentably distinct over the applied references. In addition, in view of their formal nature, the changes are not believed to raise a question on new matter.

In response to the rejection of Claims 1 and 4-6 under 35 U.S.C. §103(a), Applicant respectfully requests reconsideration of this rejection and traverses the rejection, as discussed next.

Briefly recapitulating, Applicant’s Claim 1 relates to a method to denoise a stereo signal comprising a stereo sum signal and a stereo difference signal. The method includes: a frequency selective stereo to mono blending based on the masking effect of the human auditory system; and using noise included in the stereo audio signal as a probe signal and an audio component of the audio signal as a mask signal as parameters in said blending.

Turning now to the applied references, Ishida describes a noise reduction apparatus in an FM stereo tuner, wherein a noise eliminating circuit divides a stereo differential signal into

several divisional signals.¹ In another embodiment, Ishida explains that the noise eliminating circuit eliminates a low level divisional stereo differential signal in each of the frequency bands.² However, Ishida fails to teach or suggest a frequency selective *stereo to mono blending* based on the *masking effect of the human auditory system*. As explained in Ishida, band pass filters applied on differential signals, and subsequently compared with reference voltage levels to eliminate a particular bandpass frequency from the differential signal.³ Channel filtering by with bandpass filters, as taught by Ishida, *is not* frequency selective stereo to mono blending based on the masking effect of the human auditory system, as recited in Applicant's Claim 1. In fact, Ishida is entirely silent on frequency selective stereo to mono blending.

Regarding the passage of Ishida in column 10, pointed out to by the outstanding Office Action to form the 35 U.S.C. §103(a) rejection, Ishida merely recites that a FM stereo broadcast signal is reproduced "having a natural stereo sense and good tone quality,"⁴ and this feature does not read upon Applicant's masking effect of the human auditory system.

Applicant also respectfully submits that the outstanding Office Action on page 3, lines 12-21 does not seem to address the features recited in Applicant's Claim 1. For example, Claim 1 recites "a frequency selective *stereo to mono blending* based on the masking effect" (emphasis added), while the outstanding Office Action addresses a feature regarding "dividing the stereo difference signals into sub-bands." Applicant respectfully submits that Claim 1 does not recite "dividing," and therefore request consideration of all the elements in Applicant's claims.

Regarding the reference Druyvesteyn, this reference fails to remedy the deficiencies of Ishida, since Druyvesteyn fails to teach the above feature regarding a frequency selective

¹ See Ishida in the Abstract, lines 3-9, and at column 4, lines 43-65.

² See Ishida in the Abstract, lines 14-19.

³ See Ishida at column 4, lines 43-61 and in corresponding Figure 3.

⁴ See Ishida at column 10, lines 60-62.

stereo to mono blending based on the masking effect. Druyvesteyn merely explains that “a sub-band will be optimally masked by the signals in this sub-band when the noise masking curve of the human auditory system is taken into account *in determining quantization steps*” (emphasis added).⁵ Therefore, not only is Druyvesteyn silent on a frequency selective stereo to mono blending based on the masking effect, but also Druyvesteyn merely suggests that human auditory system is taken into account in determining quantization steps for digital signal processing, for example an average a number of bits per signal sample.⁶

The reference Short also does not remedy the deficiencies of Ishida and/or Druyvesteyn, since Short also fails to teach or suggest anything regarding a frequency selective stereo to mono blending based on the masking effect.

In addition, the outstanding Office Action confirms that both Ishida and Druyvesteyn fail to teach or suggest “using noise included in the stereo audio signal as a probe signal and an audio component of the audio signal as a mask signal,”⁷ as recited in Claim 1. The outstanding Office Action, however, asserts that Short teaches such a feature. Applicant respectfully disagrees, since Short merely explains at column 2, lines 22-26 that an audio signal masks the noise component, if the audio signal is on a higher level than the corresponding frequency band of the noise signal. This teaching does not read upon the amended Claim 1 feature “using noise included in the stereo audio signal as a probe signal and an audio component of the audio signal as a mask signal as parameters in said blending,” since Short does not teach the using of probe signals and mask signals.

In this last respect, the outstanding Office Action seems to use improper hindsight by rejecting Applicant’s claims by constructing a solution based on the teachings of Applicant’s Claim 1, which is against established precedence. See In re Lowry, 32 F.3d 1579, 1583, 32

⁵ See Druyvesteyn at column 4, lines 45-55.

⁶ See Druyvesteyn at column 4, lines 57-68.

⁷ See the outstanding Office Action at page 4, line 5.

USPQ2d 1031, 1035 (Fed. Cir. 1994) to recite “[t]o establish a *prima facie* case of obviousness, the burden of establishing the absence of a novel, nonobvious functional relationship rested with the Patent and Trademark Office,” and “[t]he claimed invention involved an organization of information and its interrelationships that the prior invention neither disclosed nor suggested.” See also Monarch Knitting Mach. Corp. v. Sulzer Morat Gmbh, 139 F.3d 877, 880, 45 USPQ2d 1977, 1981 (Fed. Cir. 1998) “[d]efining the problem in terms of its solution reveals improper hindsight in the selection of the prior art relevant to obviousness.”

Therefore, even if the combination of Ishida, Druyvesteyn and/or Short is assumed to be proper, the combination fails to teach every element of the claimed invention. Specifically, the combination fails to teach the claimed frequency selective stereo to mono blending, and also fails to teach or suggest using noise included in the stereo audio signal as a probe signal and an audio component of the audio signal as a mask signal as parameters in said blending, as recited in Claim 1. Since the all the remaining references used by the outstanding Office Action to form other 35 U.S.C. §103(a) rejections fail to remedy the deficiencies of Ishida, Druyvesteyn and Short, Applicant respectfully traverses, and requests reconsideration of, this rejection based on these references.⁸

Applicant also traverses the obviousness-type rejection based on Ishida and Druyvesteyn because there is insufficient evidence for a motivation to modify Ishida’s analog FM tuner by incorporating Druyvesteyn’s digital signal processing, for the following reasons.⁹

⁸ See MPEP 2142 stating, as one of the three “basic criteria [that] must be met” in order to establish a *prima facie* case of obviousness, that “the prior art reference (or references when combined) must teach or suggest all the claim limitations,” (emphasis added). See also MPEP 2143.03: “All words in a claim must be considered in judging the patentability of that claim against the prior art.”

⁹ See MPEP 2143.01 stating “[o]bviousness can only be established by combining or modifying the teaching of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art,” (citations omitted). See also MPEP 2144.08 III stating that “[e]xplicit findings on motivation or suggestion

It is not clear from the record how Druyvesteyn's quantization steps based on human auditory system could be incorporated into Ishida's noise eliminating circuit with band-pass filters. Under such a modification, Ishida's analog noise eliminating circuit for a FM tuner would have to include digital signal processing elements. Such modification would require a substantial reconstruction or redesign of the elements of Ishida, and/or would change the basic principle of operation of Ishida. There is no evidence that a person of ordinary skill in the art would be motivated to perform such changes and redesign, and such proposed combination is also against established precedent.¹⁰

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1, 4-13, 15-23 and 25-26 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Customer Number

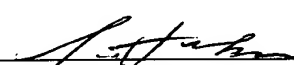
22850

Tel: (703) 413-3000

Fax: (703) 413 -2220

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Bradley D. Lytle
Attorney of Record
Registration No. 40,073

Scott A. McKeown
Registration No. 42,866

to select the claimed invention should also be articulated in order to support a 35 U.S.C. 103 ground of rejection. . . Conclusory statements of similarity or motivation, without any articulated rational or evidentiary support, do not constitute sufficient factual findings."

¹⁰ See In re Ratti, 270 F.2d 810, 813, 123 USPQ 349, 352 (reversing an obviousness rejection where the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.")